202401UECM3473OE1b

Start again

Review of preview

Started on	Monday, 19 February 2024, 06:26 PM
Completed on	Monday, 19 February 2024, 06:27 PM
Time taken	19 secs
Marks	0/9
Grade	**0** out of a maximum of 10 (**0**%)

1

Marks: 1

The random variable X ha the density function with parameter β given by

$$f(x;\beta) = (1/\beta^3)x^2e^{-(1/3)(x/\beta)^3},\ x > 0,\ \beta>0.$$

You are given the following observationof X:

4.3, 1.7, 3.0, 6.6, 4.1.

Determine the method of moments estimate of β. [Note: Γ(1+1/3) = 0.8930.] _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 3.05924
Marks for this submission: 0/1.

2

Marks: 1

You are given the following data for claim sizes:

Claim size	Number of claims
Under 1100	10
[1100, 2200)	6
2200 and up	4

The data are fit to an exponential distribution using maximum likelihood. Determine the fitted mean. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 1443.3
Marks for this submission: 0/1.

3

Marks: 1

An auto liability coverage has a claims limit of 100. Claim sizes observed are

22, 50, 58, 86, 100

where the claim at 100 was for exactly 100. In addition, there are 3 claims above the limit. The data are fitted to an exponential distribution. Determine the MLE of θ. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 123.2

Marks for this submission: 0/1.

4

Marks: 1

Annual claim counts follow a geometric distriutio with mean β.

- 99 policyholders submitted 0 claims.
- 28 policyholders submitted 1 claim.
- 2 policyholders submitted 2 claims.
- For two policyholders, it is know that they submitted either 1 claim or 2 claims, but the exact number of claims is not available.
- No policyholder submitted more that 2 claims.

Estimate β using maximum likelihood. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 0.2622
Marks for this submission: 0/1.

5

Marks: 1

10 losses have been recorded in thousands of dollars and are grouped as follows:

Interval	[0, 1)	[1, 7)
Number of Losses	3	7

There is no record of the number of losses at or above 7,000. The random variable X underlying the losses, in thousands, has the density function

$$f(x) = \lambda e^{-\lambda x},\ x > 0,\ \lambda > 0.$$

Determine L(λ) and MLE of λ. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 0.3084
Marks for this submission: 0/1.

6

Marks: 1

For an insurance policy, you are given:

- Ground-up losses follow a Weibull distribution with parameters τ =7 and θ(unknown).
- Losses under 900 are not reported to the insurer.
- For each loss over 900, there is a deductible of 900 and a policy limit of 2800.
- A random sample of six claim payments for this policy is: 315 570 985 1055 1900+ 1900+

where + indicates that the original loss exceeds 2800. Determine the 81^{th} percentile of the ground-up distribution. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 2756.08
Marks for this submission: 0/1.

7

Marks: 1

You are given:

- Fifty claims have been observed from a lognormal distribution with unknown parameters μ and σ.
- The maximum likelihood estimates are $\hat{\mu} = 7.6$ and $\hat{\sigma} = 1.79$.
- The covariance matrix of $\hat{\mu}$ and $\hat{\sigma}$ is $[c_{11} = 0.0354, c_{12} = c_{21} = 0, c_{22} = 0.0151]$

Determine the variance of the probability that the next claim will be less than or equal to 8,235 using delta method. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 0.001193
Marks for this submission: 0/1.

8

Marks: 1

Two different estimators, ψ and φ, are available for estimating the paramentes, β, of a given loss distribution. To test their performance, you have 90 simulated trials of each estimator, using β = 2, with the following results:

$\Sigma_{i=1}^{90} \psi_i = 171$, $\Sigma_{i=1}^{90} \psi_i^2 = 377$, $\Sigma_{i=1}^{90} \varphi_i = 155$, $\Sigma_{i=1}^{90} \varphi_i^2 = 341$

Calculate $MSE_{\psi}(\beta)/MSE_{\varphi}(\beta)$. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 0.6543
Marks for this submission: 0/1.

9

Marks: 1

Please click the following link to answer the questions:

https://forms.gle/qSTpANMt5X4E2fdj9

Then answer 1 here after submitting the form.
[Note: In order to enter the google form, you must make sure that you login to UTAR acccount. If you see "You need permission", this means that your are not login to UTAR account, switch to UTAR account] _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 1
Marks for this submission: 0/1.